

**REMARKS/ARGUMENTS**

**1.) Claim Amendments**

The Applicant has not amended the claims. Accordingly, claims 1-45 are pending in the application. Favorable reconsideration of the application is respectfully requested in view of the foregoing amendments and the following remarks.

**2.) Specification Amendments**

This supplemental amendment is not being made in response to any office action and does not add new matter. There are several portions of the specification as published which have been incorrectly entered or not consistently formatted (i.e., the equations). The equations in the published version of US patent application 2004/0114939 are not of a consistent format. In some cases, this leads ambiguity or lack of clarity because, for example, the format of a variable is different in one place in the document compared to another.

In general, most of the equations are in a font smaller than the body of the text. Because of the detailed nature of the equations, with subscripts, superscripts, sub-superscripts and some special symbols, it would be more readable if the equations were in the same size font as the rest of the document.

In addition, the published patent application contains many examples of variables, function names, etc. in italic font in one place and non-italic font in a different place. Often the same variable is assigned different typeface in different places. A consistent choice is needed to avoid possible ambiguity. The amendments to the specification provide a variable or constant be written in italic font, whether the variable is the regular font size or subscript or superscript, or whether it is a Greek letter. Also, the function names are written in a non-italic font, for example: Re, Im, exp, sin and cos. (Brackets and numbers, e.g. 1, 2, are written in a non-italic font)

Additionally, the variable names which refer to a vector quantity are depicted in boldface. This convention is not followed in the published application, but it would make the content far more clear. Some of the mathematical equations are intended to be

presented as a scalar quantity multiplied by a vector quantity, for example, and when the typeface does not make clear which are the scalar vector variables then the meaning is not clear.

To minimize the changes needed, it is suggested that any subscripts or superscripts are not in boldface, and that boldface vector quantities are not italicized. In this published document variables that refer to a Jones vector variable, which include a state of polarization, are considered vector quantities. In some places in the published document, a variable may not be a Jones vector and therefore be written without boldface, for example  $E_s$  for the optical signal electric field in equation 1, while elsewhere in the published application, the same variable is a Jones vector including a state of polarization and is written in boldface (e.g.,  $\mathbf{E}_s$  for the optical signal electric field in equation 10). Note that components of a vector quantity, i.e., the two elements of the column vector, are not themselves vector quantities and so do not have to be in boldface.

Some changes must be made to apply the rules above regarding vector quantities. The only letters which are used to represent vector variables in the document are  $\mathbf{E}$  (with various subscripts),  $\hat{\mathbf{P}}$  (with various subscripts),  $\hat{\mathbf{x}}$  and  $\hat{\mathbf{y}}$ . The specification has been amended to provide this consistent formatting.

Additionally, some variables have both a superscript and a subscript, for example a subscripted variable raised to a power, or the complex conjugate of a subscripted variable. In most cases in the published application, the superscript appears to the right of the subscript. In some places the superscript appears above the subscript. The former case appears to be the most clear, and the specification has been amended to provide this consistency.

A symbol for convolution is used in some places in the published application, which is a circle with a horizontal/vertical cross (plus sign) inside " $\oplus$ ". The conventional symbol for convolution is a circle with a diagonal cross inside " $\otimes$ " as originally filed. However, this has been changed in the published application to the horizontal/vertical cross. The specification is being amendment to show the proper convolution symbol.

In addition, within the published application, some equations are too long to fit in one line, and the break has been inserted in a place which makes the equation harder to comprehend. Preferably, the break after the equal sign should be used. In particular, the breaks for the following should be utilized:

paragraph 0122, equation 19 – place break after equal sign, or after plus on R.H.S. of equation

paragraph 0163, equation 26a – place break after equal sign, or after plus on R.H.S. of equation

paragraph 0163, equation 26b – place break after equal sign, or after plus on R.H.S. of equation

paragraph 0166, equation 28 – place break after equal sign, or after plus on R.H.S. of equation

### 3.) Format Corrections

There are several portions of the published application which are incorrectly formatted, but which cannot be submitted as an amendment to the specification. In particular, there are two separate equations at the end of paragraph 0018. The second equation is equation 1. The two equations should be on separate lines. One of the exponentials in the first equation reads  $e^{-\omega_s t}$  instead of  $e^{-i\omega_s t}$ . There is a long space between "2" and "Re" in the second equation. The space is not necessary since it refers to "2 multiplied by the real part of ..." In the argument of the final exponential of the second equation, " $\omega$ " appears to be in subscript instead of "LO".

In paragraphs 0132 and 0133, the final three equations belonging to these two paragraphs are of the form *equation ... condition*. There should be more space between the equation and the condition, so that the meaning is more clear. Additionally, the font sizes and the alignment of the four equations are not the same. The second two equations are in a different paragraph from the first two. This also makes the meaning less clear. Thus, placement of all four equations should be in the same paragraph.

CONCLUSION

In view of the foregoing remarks, the Applicants believe all of the claims currently pending in the Application to be in a condition for allowance. The Applicants, therefore, respectfully request that the Examiner withdraw all rejections and issue a Notice of Allowance for claims 1-45.

The Applicants request a telephonic interview if the Examiner has any questions or requires any additional information that would further or expedite the prosecution of the Application.

Respectfully submitted,



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